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U.S. Nuclear Regulatory Commission  
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Washington, D.C. 20555

Subject: Indian Point 3 Nuclear Power Plant  
Docket No. 50-286  
License No. DPR-64  
**10 CFR 50.12 Exemption Request for Post  
Accident Containment Ventilation System**

References: 1. SECY-02-0080, Proposed Rulemaking-Risk-Informed 10 CFR 50.44,  
"Combustible Gas Control In Containment," May 13, 2002.

Dear Sir:

Pursuant to 10 CFR 50.12(a), Entergy Nuclear Operations, Inc. (ENO) requests an exemption from the requirements of 10 CFR 50.44(f) for the Indian Point 3 Nuclear Power Plant. This request will eliminate licensing basis requirements for the Post Accident Containment Ventilation (PACV) System. Attachment I contains the basis for this request in accordance with the criteria of 10 CFR 50.12(a). The exemption is requested by January 31, 2003 to support the planned retirement of the PACV System during the next refuel outage.

This exemption is justified because application of 10 CFR 50.44 would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule. This has been demonstrated in the proposed rulemaking (reference 1) that will eliminate the requirements for the Hydrogen Recombiner System and the backup Post Accident Containment Ventilation System. The current request is limited to the PACV System and does not ask for an exemption for removal of the Hydrogen Recombiner System.

A copy of this application and the associated attachments are being submitted to the designated New York State official in accordance with 10 CFR 50.91.

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There are no new commitments made by ENO in this submittal. If you have any questions regarding this submittal, please contact Mr. K. Kingsley at (914) 734-5581.

I declare under penalty of perjury that the foregoing is true and correct.

Very truly yours,



Robert J. Barrett  
Vice President, Operations  
Indian Point 3 Nuclear Power Plant

Executed on 11/3/02  
(Date)

Attachment as stated

cc: Regional Administrator  
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**REQUEST FOR EXEMPTION FROM 10 CFR 50.44(f)**

**1.0 EXEMPTION REQUEST**

Pursuant to Title 10 of the Code of Federal Regulations, Part 50.12, "Specific Exemptions", Entergy Nuclear Operations requests an exemption from the requirements of 10 CFR 50.44(f) to allow removal of the Post Accident Containment Ventilation (PACV) System from the Licensing basis.

10 CFR 50.44(f) states

"(f) For facilities with respect to which the notice of hearing on the application for a construction permit was published between December 22, 1968, and November 5, 1970, if the incremental radiation dose from purging (and repressurization if a repressurization system is provided) occurring at all points beyond the exclusion area boundary after a postulated LOCA calculated in accordance with §100.11(a)(2) of this chapter is less than 2.5 rem to the whole body and less than 30 rem to the thyroid, and if the combined radiation dose at the low population zone outer boundary from purging and the postulated LOCA calculated in accordance with §100.11(a)(2) of this chapter is less than 25 rem to the whole body and less than 300 rem to the thyroid, only a purging system is necessary, provided that the purging system and any filtration system associated with it are designed to conform with the general requirements of Criteria 41, 42, and 43 of appendix A to this part. Otherwise the facility shall be provided with another type of combustible gas control system (a repressurization system is acceptable) designed to conform with the general requirements of Criteria 41, 42, and 43 of appendix A to this part. If a purge system is used as part of the repressurization system, the purge system shall be designed to conform with the general requirements of Criteria 41, 42, and 43 of appendix A to this part. The containment shall not be repressurized beyond 50 percent of the containment design pressure."

ENO requests this exemption by January 31, 2003 to support Refueling Outage 12.

**2.0 SYSTEM DISCUSSION AND REGULATORY REQUIREMENTS**

**2.1 System Discussion**

The IP3 facility was licensed to operate with a combustible gas control system comprised of a Hydrogen Recombiner System and a backup purge system. "The Category I Hydrogen Recombination System consists of two redundant flame recombinder units. Either unit will be capable of maintaining the hydrogen concentration in the containment

below the lower flammability limit....The applicant has also provided a backup purge system that is capable of maintaining the hydrogen concentration in the containment below 3 v/o." Reference 6.1. The original flame recombiners have been replaced with electric recombiner units.

The purge system at IP3 is the PACV System that consists of a containment penetration supply/exhaust line through which pressurized air is introduced into the containment. When the pressure differential between inside containment and outside containment increases, the introduction of pressurized air is stopped and containment air is purged through the same line which is aligned to release containment atmosphere through filtration. The pressure differential is the driving force. The system was designed to obtain a flow of 200 scfm with containment pressure at 1.9 psig. For this flow rate, the residence time in the charcoal filters is approximately 0.4 seconds. This system is described in FSAR section 5.4. Figure 5.4-2 shows details of the system and installation. FSAR Table 5.4 presents the results of dose analyses associated with actuation of the PACV system following a postulated LOCA and indicates compliance with 50.44(f) dose limits.

The PACV is described in Section 6.8 of the UFSAR as a backup system to the hydrogen recombiner system. The electric hydrogen recombiner system installed at Indian Point 3 is an engineered safety feature to control the hydrogen generated in the containment following a Loss-of-Coolant Accident. The redundant subsystems (i.e., recombiners and associated equipment) are designed to seismic Class I Standards. Two full rated, redundant and independent subsystems are provided. Each recombiner is powered from a separate safety related MCC. Each is capable of maintaining the ambient H<sub>2</sub> concentration at or below three volume percent (v/o). Each recombiner subsystem consists of a control panel located in the Control Room, a power supply cabinet located in the lower electrical cable tunnel, at elevation 34 ft., and a recombiner located on the operating deck at elevation 95 ft. in the containment. The electric hydrogen recombiners are located in the southeast and southwest quadrants of the containment approximately 90° apart in the same location as the old flame type recombiners they replaced. There are no moving parts or controls inside the recombiners. Heated air within the unit causes airflow by natural convection. The recombiner is a completely passive device. The controls for the power supply are located in the Control Room and are manually actuated.

The existing IP3 Hydrogen Recombiner System and PACV System meet the requirements of 10 CFR 50.44 and each system meets the requirements of 10 CFR 50, Appendix A with respect to the hydrogen which may be released into the reactor containment following postulated design basis accidents. The existing containment hydrogen control system is designed to ensure that the hydrogen concentration is maintained below required limits following a design basis LOCA. Hydrogen stratification in the containment post-LOCA is minimized by the operation of the containment fan coolers. The containment coolers circulate air within the containment volume (free volume of 2,610,000 cubic feet with a design pressure of 47 psig). The hydrogen mixing

is not affected by this exemption request. The post-LOCA hydrogen generation model is described in Section 14.3.7 of the FSAR.

## 2.2 Regulatory Requirements

The Code of Federal Regulation was revised after the initial operation of IP3 to specify the standards for combustible gas controls. The requirements of 10 CFR 50.44 were added in October 27, 1978 and establish the requirements for controlling the amount of hydrogen inside the reactor containment following a postulated LOCA. Reference 6.2. These requirements provide specific assumptions and methods to define the amount of hydrogen generated, the rate at which the hydrogen is generated, and the requirements of a combustible gas control system to control the concentration of hydrogen in the containment following a design basis LOCA to below flammability limits.

10 CFR 50.44(c)(3)(ii) requires all plants to have recombiner capability. Currently, no exemption is being requested for this requirement. 10 CFR 50.44 Sections (e), (f) and (g) apply to plants whose notice of hearing on the construction permit application was filed on or after November 5, 1970, between December 22, 1968 and November 5, 1970 and on or before December 22, 1968, respectively. These sections apply to purging. 10 CFR 50.44(f) is applicable to IP3 since the construction permit hearing for IP3 was noticed in the Federal Register on February 5, 1969. The requirements of 10 CFR 50.44(f) are somewhat ambiguous about the need for a purge system when it is not the primary means of hydrogen control. NRC has clarified the rule in Generic Letter (GL) 84-09 which says "we wish to make it clear that a plant that has a "safety grade" purge / repressurization system designed to conform with the general requirements of Criteria 41, 42 and 43 of Appendix A of 10 CFR Part 50 and installed in accordance with SS50.44(f) or SS50.44(g) must continue to have that system, even though it may be determined with respect to SS50.44(c)(3) that the plant does not rely on that system as the primary means for hydrogen control: thus, a decision on recombiner capability does not affect the requirements of SS50.44(f) and SS50.44(g) for the "safety grade" purge / repressurization system." Based on the clarification in the GL, an exemption request to 10 CFR 50.44(f) is required to retire the PACV system.

There is no exemption requested for the 10 CFR 50, Appendix E, Section VI, "Emergency Response Data System," requirements to monitor hydrogen concentration. Hydrogen monitors continue to be required by Technical Specifications.

There is no exemption requested for 10 CFR 50, Appendix A, Criterion 41, "Containment Atmosphere Cleanup," since IP3 was licensed to the 1967 General Design Criteria. No exception is taken to the 1967 General Design Criteria and no exception is taken to our licensing commitments with respect to GDC 41. These commitments are found in response to the NRC order of February 11, 1980 that IP3 evaluate compliance with 10 CFR 50, Appendix A. Reference 6.3. The hydrogen recombiners were credited for hydrogen cleanup since they are safety grade, single failure proof and of 100 percent capacity. They continue to satisfy the licensing basis for Criterion 41 since no exemption

is currently requested. The hydrogen recombiners would also be sufficient to meet Criterion 41 requirements if they were applicable.

3.0 10 CFR 50.12 CRITERIA FOR EXEMPTIONS

3.1 Requirements for an Exemption

10 CFR 50.12 states that the Commission may grant, upon application, exemptions from the requirements of this regulation that are:

- 1) Authorized by law,
- 2) will not present an undue risk to the public health and safety,
- 3) are consistent with the common defense and security.

The proposed exemption has been evaluated against these criteria as follows:

1) Authorized by law –

The proposed exemption is to a regulation issued by the Nuclear Regulatory Commission under the authority conferred upon them by law. The Nuclear Regulatory Commission is therefore authorized by law to grant an exemption to that regulation.

2) will not present an undue risk to the public health and safety –

In order to demonstrate that there is no undue risk to public health and safety, the proposed exemption was evaluated using the criteria established in 10 CFR 50.92 for determining whether a proposed amendment to an operating license involves a significant hazards consideration. It is concluded that the proposed exemption does not pose an undue risk to public health and safety since the following assessment indicates no significant safety hazard exists.

1. Will operation of the facility in accordance with this proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

The Post Accident Containment Vent System is not considered to be an accident initiator so this change does not increase the probability of an accident previously evaluated. The PACV System is provided as a backup system to ensure that the hydrogen concentration is maintained below required limits so that containment integrity is not challenged following a postulated design basis Loss Of Coolant Accident (LOCA). This safety function is maintained by the safety grade Hydrogen Recombiner System which meets the redundancy, design, testing and maintenance requirements of safety related systems. The recombiners continue to be required and are Technical Specification Systems. Therefore, this change

does not increase the consequences of accidents previously evaluated.

2. Will operation of the facility in accordance with this proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

This proposed exemption does not change the design or configuration of the plant beyond the PACV System. Hydrogen generation and control following a design basis LOCA has been evaluated in accordance with regulatory requirements in 10 CFR 50.44. Deletion of the PACV System does not alter these evaluations. Deletion of the PACV does not alter system operations or plant operations in any manner that could create a potential accident.

3. Will operation of the facility in accordance with this proposed change involve a significant reduction in a margin of safety?

No. The Hydrogen Recombiner System is provided to ensure that the hydrogen concentration is maintained below flammability limits so that containment integrity is not challenged following a design basis Loss Of Coolant Accident (LOCA). The hydrogen recombiners are redundant safety grade systems and therefore provide assurance that their safety function will be performed with reliability similar to other safety grade systems. The PACV system is a backup system that would only be used as a last resort since it would increase offsite doses. Therefore, this change does not result in a reduction in a margin of safety.

- 3) are consistent with the common defense and security –

The proposed change affects the provisions for containment hydrogen control and has no effect on the security of the facility or security outside of the facility. The proposed change is, therefore, consistent with common defense and security.

### 3.2 Special Circumstances

10 CFR 50.12 says that the Commission will not consider granting an exemption unless one or more of six special circumstances are met. Special circumstance 2 states “Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule.” This exemption request is based on the fact that application of the regulation would not serve the underlying purpose of the rule and is not necessary to achieve the underlying purpose of the rule.

The underlying purpose of the rule, with respect to IP3, was to provide a new standard with respect to combustible gas control systems to assure that the Containment would not fail due to combustible gas accumulation and ignition in post accident situations

where fission products were released.

Application of the regulation would not serve the underlying purpose of the rule because the NRC staff has recognized that the combustible gas generated by a design basis accident does not pose a significant risk to containment integrity. Reference 6.4. For this reason the NRC staff has recommended revisions to 10 CFR 50.44 that would eliminate some requirements pertaining to design basis accidents. References 6.5 and 6.6.

The PACV System is not necessary to achieve the underlying purpose of the rule because the redundant safety grade hydrogen recombiner system is available to eliminate the hydrogen generated using the assumptions of Regulatory Guide 1.7, Revision 2, cited in the statements of consideration for the rule as a basis for hydrogen generation calculations.

#### 4.0 CONSIDERATIONS IN GRANTING AN EXEMPTION

10 CFR 50.12 identifies four factors considered in granting an exemption. These were assessed as follows:

- Whether conduct of the proposed activities will give rise to a significant adverse impact on the environment and the nature and extent of such impact, if any;

The proposed exemption does not give rise to any adverse environmental impact. The function of the PACV System is to control the post accident hydrogen concentration in Containment by purging hydrogen to the atmosphere. The hydrogen control function will be maintained by the hydrogen recombiners. Retiring the PACV System involves capping several pipes and removing or retiring in place system components. These activities will have no discernable environmental impact.

- Whether redress of any adverse environment impact from conduct of the proposed activities can reasonably be effected should such redress be necessary;

No redress of environmental impacts will be required.

- Whether conduct of the proposed activities would foreclose subsequent adoption of alternatives; and

There will be no foreclosure of any options. The Commission is moving forward with rulemaking that will eliminate the requirements for which exemption is sought.

- The effect of delay in conducting such activities on the public interest, including the power needs to be used by the proposed facility, the availability of alternative sources, if any, to meet those needs on a timely basis and delay costs to the applicant and to consumers.



The effects of delay are not significant with respect to overall public interest. They will affect the completion of work that has been scheduled and budgeted to retire the PACV System during the next refueling outage. The change will also save money required by the PACV System that could be utilized elsewhere in the plant.

## 5.0 PRECEDENT

The Commission has approved several exemption requests prior to this that allow removal of both the PACV System and the hydrogen recombiners. The approval of these exemptions is found in References 6.7, 6.8, and 6.9.

## 6.0 REFERENCES

1. "SAFETY EVALUATION REPORT BY THE DIRECTORATE OF LICENSING, U.S. ATOMIC ENERGY COMMISSION IN THE MATTER OF CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. INDIAN POINT 3 NUCLEAR GENERATING UNIT NO. 3 DOCKET NO. 50-286," dated September 21, 1973.
2. Federal Register Volume 43, No. 209, page 50162 to 50164, October 27, 1978.
3. Power Authority of New York letter to Director of Nuclear Reactor Regulation, "Confirmatory Order (Interim Actions) Six Month Response," dated August 11, 1980 (IPN-80-77).
4. SECY-00-198, Status Report on Study of Risk-Informed Changes to the Technical Requirements of 10 CFR Part 50 (Option 3) and Recommendations on Risk-Informed Changes to 10 CFR 50.44 (Combustible Gas Control), September 14, 2000.
5. SECY-02-0080, "Proposed Rulemaking—Risk-Informed 10 CFR 50.44 "Combustible Gas Control In Containment" (WITS 20010003)," dated May 13, 2002.
6. Memorandum A.L.Vietti-Cook to W D. Travers regarding Commission Approving SECY-02-080, June 27, 2002.
7. NRC letter to W.R. McCollum, Jr., Approving an Exemption For Oconee 1, 2 and 3 to the Hydrogen Control Requirements of 10 CFR 50.44, 10 CFR 50, Appendix A, Design Criterion 41, 10 CFR 50 Appendix E, Section VI, dated July 17, 2001.
8. NRC Letter to O. D. Kingsley, Approving an Exemption For TMI 1 to the Hydrogen Control Requirements of 10 CFR 50.44, 10 CFR 50, Appendix A, Design Criterion 41, 10 CFR 50 Appendix E, Section VI, dated February 8, 2002.

9. NRC Letter to J. A. Stall, Approving an Exemption For Turkey Point 1 and 2 to the Hydrogen Control Requirements of 10 CFR 50.44, 10 CFR 50, Appendix A, Design Criterion 41, 10 CFR 50 Appendix E, Section VI, dated July 17, 2001.